

## **REMARKS**

### **I. Status of the Claims**

Claims 1, 2, 13-15, 23-29, 43, 44, 54-56, 58, 65 and 67 are pending. Claims 54-56, 58, 65 and 67 have been withdrawn by the from consideration by the Examiner as being directed to non-elected subject matter. Applicants specifically reserve the right to pursue all withdrawn subject matter in one or more divisional and/or continuation application.

Claims 1, 2, and 43 have been amended to specify that the transmittance of the claimed dispersoid, expressed as the spectral transmittance measured at a dispersoid concentration of 0.5 wt % based on oxide, at a quartz cell light path length of 1 cm, using an organic solvent which is used in dispersing the dispersoid when measuring the spectral transmittance as the control, and at a light wavelength of 550 nm, is 80% to 100%. Claim 43 has been amended to specify that the transmittance of the claimed dispersoid, expressed as the spectral transmittance measured at a dispersoid concentration of 0.5 wt % based on oxide, at a quartz cell light path length of 1 cm, using the organic solvent as the control, and at a light wavelength of 550 nm, is 80% to 100%. Support for these amendment can be found throughout the original specification as published (US 2006/0239902), e.g., at p. 7, paragraph [0057]; pp. 8-9, paragraph [0077]; and in Examples 1 (paragraph [0200]), 3 (paragraph [0205]), 5 (paragraph [0208]), 7 (paragraph [0210]), and 9 (paragraph [0212]). Thus, no new matter is added by these amendments.

Claim 13 has been amended to properly recite a Markush group according to USPTO practice. No new matter is added by this amendment.

Claim 24 has been amended to specify that the recited hydrocarbon solvent is not an alcohol solvent. This is done to clarify that the water is diluted in a co-solvent system where one solvent is a hydrocarbon solvent other than alcohol and the second solvent is an alcohol solvent. This amendment serves to make it clear that the water is not diluted in alcohol only. Support for this amendment can be found in the original specification as published at least at pp. 7-8, paragraphs

[0059] – [0063], which respectfully set out examples of hydrocarbon solvents, alcohol solvents, and the mixing ratio of hydrocarbon-to-alcohol solvents. These paragraphs make it clear that claim 24 refers to a co-solvent system containing two different solvents. Thus, no new matter is added by this amendment.

Claim 44 has been amended to correct a typographical error by changing “monodisperse” to “monodispersed.” Thus, no new matter is added by this amendment.

All amendments herein are made without prejudice or disclaimer as to all deleted subject matter. Applicants specifically reserve the right to pursue all deleted subject matter in one or more divisional and/or continuation application.

## II. Restriction Requirement

The Examiner has required restriction between:

Group I: Claims 1, 2, 13-15, 23-29, 43, 44 and 67, drawn to a dispersoid having metal-oxide bonds; and

Group II: Claims 54-56, 58, 65 and 67, drawn to a metal-oxide film.

In response, Applicants hereby elect, **with traverse**, Group I, claim 1, drawn to a dispersoid having metal-oxide bonds (Applicants note that Applicants' representative, Mr. Flynn Barrison (Registration No. 53,970), provisionally made the same election, i.e., Group I, claim 1, during a December 16, 2008 telephone conversation with the Examiner.). Applicants respectfully traverse the Restriction Requirement. Applicants contend that a search of the subject matter recited in the claims, the common technical feature of which is a metal-oxide, does not represent an undue burden on the Examiner. In addition, Applicants disagree with the Examiner's contention that the claimed dispersoids are shown in the cited prior art (US 6,235,260) for reasons set forth below. Accordingly, Applicants respectfully request reconsideration and withdrawal of the Restriction Requirement.

### **III. Rejection under 35 U.S.C. § 112, second paragraph**

Claims 13, 26 and 43 are rejected under 35 U.S.C. § 112, second paragraph, for alleged indefiniteness. Applicants traverse.

Claim 13 stands rejected because it recites the language “and/or a dispersion stabilizer.” In response, claim 13 has been amended to properly state a Markush group and to remove the language “and/or.” Claim 13 as amended, is definite and thus satisfies the requirements of 35 U.S.C. § 112, second paragraph. Accordingly, this rejection should be withdrawn.

Claim 26 recites that “water in the diluted solution has a concentration that is from 40% to 1% of the saturation solubility of water in a mixed solvent of the hydrocarbon solvent and the alcohol solvent.” According to the Examiner, this language is unclear. The Applicants traverse. The Examiner asserts that 40% to 1% is the “given range [of] the concentration of water in the mixed solvent.” The Examiner is incorrect, and this is clearly evident in the claim language, which does not recite a percentage concentration of water of 40% to 1% of the solvent, as the Examiner contends, but instead recites a “concentration that is from 40% to 1% of the saturation solubility of water in a mixed solvent.” (emphasis added). 1% to 40% of the saturation solubility of a solute in a solvent is clearly not the same as a 1% to 40% overall concentration of a solute (water) in a solvent, and one of ordinary skill in the art would certainly understand this. In addition, one of ordinary skill in the art would understand that water has a certain maximum solubility in a co-solvent system, and that this maximum solubility is represented by the molar or mass amount of water that can be added to the co-solvent before the co-solvent is saturated and additional water no longer stays in solution, i.e., the amount of water has exceeded the saturation capability of water in the particular co-solvent being employed. The amount of water (either molar or mass amount) that reaches the solubility limit for water in a particular co-solvent, i.e., the saturation point, is 100%. Claim 26 recites that that the dispersoid solution contains 1% to 40% of the amount of water it takes to reach the saturation point. Thus, claim 26 does not recite a dispersoid solution containing 1%-40% water in a co-solvent, as the Examiner contends, but instead recites a dispersoid solution that contains 1% to 40% of the amount of water it takes to reach the saturation point in the particular co-

solvent system being employed. One of ordinary skill in the art, upon reading claim 26, would certainly understand this. Accordingly, claim 26 is definite as written and thus satisfies the requirements of 35 U.S.C. § 112, second paragraph, and this rejection should be withdrawn.

The Examiner also asserts that claim 26 also recites a particle size range of between 0 and 40 nm, which range is broader than claim 43, from which it depends. The Applicants respectfully traverse. First, claim 26 does not depend from claim 43, and it does not recite a particle size range at all, much less a particle size range of from 0 to 40 nm. For these reasons, this rejection should be withdrawn.

#### IV. Rejections under 35 U.S.C. § 102(b)

##### **1. Claims 1 and 2 over JP 10-298769 A**

Claims 1 and 2 are rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Japanese laid-open patent application no. 10-298769 A (“JP 10-298769 A”). In response, without conceding the validity of the rejection, the Applicants have amended claims 1 and 2 to specify that that the transmittance of the claimed dispersoid, expressed as the spectral transmittance measured at a dispersoid concentration of 0.5 wt % based on oxide, at a quartz cell light path length of 1 cm, using an organic solvent which is used in dispersing the dispersoid when measuring the spectral transmittance as the control, and at a light wavelength of 550 nm, is 80% to 100%. JP 10-298769 A does not disclose a dispersoid having the transmittance recited in claims 1 and 2 as amended. Accordingly, because JP 10-298769 A does not disclose each and every limitation of claims 1 and 2, it cannot anticipate these claims.

Moreover, the dispersoids taught in JP 10-298769 A require a pH adjustment to remain stable and homogenous in solution (*see, e.g.*, JP 10-298769 A, paragraphs [0032] and [0033]), whereas the instantly claimed dispersoids are stable without the use of an acid, base or dispersion stabilizer to adjust the pH and maintain stability (this is evidenced throughout the original specification as published, *see, e.g.*, p. 1, paragraph [0007], stating that with prior art dispersoids

"[p]articularly when solution polymerization is carried out in an organic solvent, stabilizing the presence of metal alkoxide hydrolysates within the solution requires the use of an acid, base or dispersion stabilizer."). Thus, for this reason as well, the stable dispersoids recited in the instant claims are not taught in JP 10-298769 A.

Accordingly, for at least the reasons stated above, JP 10-298769 A does not anticipate claim 1 or claim 2 as amended, and this rejection should be withdrawn.

**2. Claims 1, 2, 13-15, 23, and 27-29 over US 6,235,260**

Claims 1, 2, 13-15, 23, and 27-29 are rejected under 35 U.S.C. § 102(b) as allegedly anticipated by US 6,235,260 to Toki ("Toki"). In response, without conceding the validity of the rejection, the Applicants have amended claims 1 and 2 to specify that that the transmittance of the claimed dispersoid, expressed as the spectral transmittance measured at a dispersoid concentration of 0.5 wt % based on oxide, at a quartz cell light path length of 1 cm, using the organic solvent as the control, and at a light wavelength of 550 nm, is 80% to 100%. As with JP 10-298769 A, discussed above, Toki does not disclose a dispersoid having the transmittance recited in claims 1 and 2 as amended. Accordingly, because Toki does not disclose each and every limitation of claims 1 and 2, it cannot anticipate these claims.

With regard to claim 13, Toki does not add water to the metal alkoxide directly. Instead, Toki dissolves metal alkoxide in an organic solvent, and the water-ethanol mixture is prepared separately. More specifically, in Toki the metal hydroxide is dissolved in an organic solvent and cooled, and the separately prepared water-ethanol mixture is cooled (separately), after which the metal hydroxide-organic solvent solution and the water-ethanol solution are mixed. According to the Examiner, the ethanol used to dissolve an alkoxide in Toki contains, at least inherently, some water (*see* Office Action, p. 6). The Applicants disagree – if the ethanol inherently contains some water, then it would not be necessary to specify "the mixed solution of water-ethanol" for the other solution used in a subsequent step, as Toki does (*see* Toki, col. 12, line 52 (where it is stated "[t]hen a mixed solution of distilled water-ethanol was prepared so that concentration of solid In<sub>2</sub>O<sub>3</sub> and

SnO<sub>2</sub> was 10 weight % when added to the mixed solution of alkoxide.”). In addition, as shown in Example 17 of the instant application (which appears at p. 22, paragraph [0221] of the application as published), which relates to claim 13, a partial hydrolysate of titanium tetraisopropoxide (the product obtained by adding 0.9 mole of water per mole of titanium tetraisopropoxide and hydrolyzing) is used. That is, 16.2 grams (“g”) of water are added to 1 mole of titanium tetraisopropoxide. As the molecular weight of titanium tetraisopropoxide is 284.22 and the amount of the partial hydrolysate used in Example 17 is 68.44 g, the content of the water is 3.6 g ( $66.84 \times 16.2/284.22 + 16.2$ ). This partial hydrolysate is dissolved in 402.74 g toluene. According to the Examiner’s analysis, it is interpreted that 402.74 g of toluene has 3.6 g of water. For at least this reason, Toki does not teach each and every limitation of claim 13, and thus Toki cannot anticipate claim 13.

Regarding claims 27-29, which recite that water is added in divided portions to a metal compound, the Examiner contends that water is added in divided portions in Toki Examples 27-42, more specifically, in the first step and again in the next step. The Applicants disagree and respectfully contend that the Examiner has misread Toki. In Toki Examples 27-42, water is added in one step only. Thus, in addition to the reasons provided above, Toki does not disclose each and every limitation of claims 27-29 and thus cannot anticipate those claims.

Further regarding the dispersoids claimed in instant claims 1, 2, 13, 27 and 28, the dispersoids taught in Toki require a pH adjustment to remain stable and homogenous in solution, whereas the instantly claimed dispersoids are stable without the use of an acid, base or dispersion stabilizer to adjust the pH and maintain stability (this is evidenced throughout the original specification as published, *see, e.g.*, p. 1, paragraph [0007], stating that with prior art dispersoids “[p]articularly when solution polymerization is carried out in an organic solvent, stabilizing the presence of metal alkoxide hydrolysates within the solution requires the use of an acid, base or dispersion stabilizer.”). Thus, for at least this additional reason, Toki does not disclose the dispersoids of claims 1, 2, 13, 27 or 28.

Claims 14, 15 and 23 depend from claim 13. Claim 29 depends from claim 28. A dependent claim includes all the limitations of the claim from which it depends (and further limits the claim). Thus, because Toki does not anticipate claims 13 or 29, it cannot anticipate the claims that depend from claims 13 and 28, namely dependent claims 14, 15, 23 and 29.

Accordingly, for at least the reasons stated above, Toki does not anticipate claims 1 (as amended), 2 (as amended), 13-15, 23, or 27-29, and this rejection should be withdrawn.

### 3. Claims 24-26, 43 and 44 over US 4,801,399

Claims 24-26, 43 and 44 are rejected under 35 U.S.C. § 102(b) as allegedly anticipated by US 4,801,399 to Clark ("Clark"). Applicants respectfully traverse.

Regarding claims 24-26, the Applicants respond as follows: Without conceding the validity of the rejection, the Applicants have amended claim 24 to specify that the recited hydrocarbon solvent is not an alcohol solvent. This was done to clarify that the water is diluted in a co-solvent system where one solvent is a hydrocarbon solvent other than alcohol and the second solvent is an alcohol solvent. This amendment serves to make it clear that the water is not diluted in alcohol only. *See pp. 7-8, paragraphs [0059] – [0063]*, which respectfully set out examples of hydrocarbon solvents, alcohol solvents, and the mixing ratio of hydrocarbon-to-alcohol solvents. These paragraphs make it clear that claim 24 refers to a co-solvent system containing two different solvents. The Examiner relies on the alleged fact that because "alcohol solvent is a hydrocarbon solvent" Clark, which discloses butanol as a solvent, teaches the hydrocarbon solvent recited in the rejected claims. The Applicants disagree. Clark nowhere teaches a co-solvent system where one solvent is a hydrocarbon solvent other than an alcohol and the other solvent is an alcohol solvent. In fact, Clark does not teach a co-solvent system at all, but instead discloses water in a single organic solvent, butanol. Thus, because Clark does not disclose each and every limitation of instant claim 24, Clark cannot anticipate claim 24. Claims 25 and 26 depend from claim 24. As stated above, a dependent claim includes all the limitations of the claim from which it depends (and further limits

the claim). Thus, because Clark does not anticipate claim 24, it cannot anticipate the claims that depend from claim 24, namely dependent claims 25 and 26.

Regarding claims 43 and 44, the Applicants respond as follows: without conceding the validity of the rejection, the Applicants have amended claim 43 to specify that that the transmittance of the claimed dispersoid, expressed as the spectral transmittance measured at a dispersoid concentration of 0.5 wt % based on oxide, at a quartz cell light path length of 1 cm, using the organic solvent as the control, and at a light wavelength of 550 nm, is 80% to 100%. Clark does not disclose a dispersoid having the transmittance recited in claim 43 as amended. Accordingly, because Clark does not disclose each and every limitation of claim 43, it cannot anticipate the claim. Claim 44 depends from claim 43. Again, a dependent claim includes all the limitations of the claim from which it depends (and further limits the claim). Thus, because Clark does not anticipate claim 43, it cannot anticipate any claim that depends from claim 43, namely claim 44.

Accordingly, for at least the reasons stated above, Clark does not anticipate claims 24 (as amended), 25, or 26, or claims 43 (as amended) or 44, and this rejection should be withdrawn.

#### V. Rejection under 35 U.S.C. § 102/103

Claim 26 is rejected as anticipated by or, in the alternative, obvious over, Clark. Applicants respectfully traverse.

The Examiner contends that Clark teaches a concentration range for water in the mixed solvent of between 30 and 50%, and asserts that this range is within the claimed range. The Applicants respectfully disagree, and point out once again that claim 26 does not recite a dispersoid solution containing 1%-40% water in a co-solvent, as the Examiner contends, but instead recites a dispersoid solution that contains 1% to 40% of the amount of water it takes to reach the saturation point in the particular co-solvent system being employed. Clark nowhere discloses a dispersoid solution wherein the amount of water is determined based upon the saturation point for water solubility in the particular co-solvent system being employed. Put another way, claim 26 does not

recite a dispersoid solution containing 1%-40% water in a co-solvent, and therefore is not anticipated by a reference that discloses a co-solvent having 1-40% water. Therefore, at least because Clark does not teach each and every limitation of claim 26, Clark cannot anticipate claim 26. Also, as stated above, Clark does not teach a co-solvent system at all, but instead discloses water in a single organic solvent, butanol, and thus does not disclose the mixed solvent limitation recited in claim 26. Therefore, at least for these reasons, Clark does not teach each and every limitation of claim 26, and thus cannot anticipate claim 26. Finally, claim 26 depends from claim 24, and, as demonstrated above, Clark does not anticipate claim 24. Accordingly, because a dependent claim includes all the limitations of the claim from which it depends (and further limits the claim), Clark does not anticipate claim 26.

Moreover, as regards obviousness, Clark does not teach or suggest a dispersoid solution wherein the amount of water is determined based upon the saturation point for water solubility in the particular co-solvent system being employed. Thus, because Clark does not teach or at least every limitation of claim 26, no *prima facie* case of obviousness exists over Clark, either.

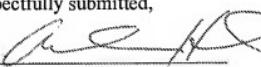
Accordingly, for at least the reasons stated above, claim 26 is not anticipated by, or obvious over Clark, and this rejection should be withdrawn.

**VI. Conclusion**

This application is believed to be in condition for allowance, which is earnestly solicited. If the Examiner believes there are further issues that could be advance by an interview or entry of an Examiner's Amendment, the Examiner is invited to contact the undersigned attorney.

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Respectfully submitted,

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